UNITED STATES PATENT AND TRADEMARK OFFICE

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09/904,147	07/11/2001	Shinsuke Mori	JP9-2000-0133US1	2401

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EXAMINER
SMITS, TALIVALDIS IVARS

ART UNIT	PAPER NUMBER
2626	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 August 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-6, 8-12, 14-20, 23 and 24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-6, 8-12, 14-20, 23 and 24</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   In response to the Office Action, mailed 3/20/2007 and the Notice of Non-

Compliant Amendment, mailed 7/31/2007, applicant has submitted an Amendment, filed

8/28/2007, amending all the independent claims (1, 4, 8-9, and 14-20), adding new

dependent claims 22-23, and arguing to traverse the art rejections.

The amendment of said independent claims has overcome the rejections over 35

USC 101 in the previous Office Action.

Specification

2.   The Title of the invention is not sufficiently descriptive. A new Title is required

that is more clearly indicative of the novelty in the invention to which the claims are

directed.

Response to Arguments

3.   Applicant's arguments filed 8/28/2007 have been fully considered but they are

not persuasive.

4.   Applicant argues that Dekai (Wu) does not teach that "the nearest preceding

word *is not* taken into account *if it does not have a modification relationship* with the

target word (i.e. the word to be predicted)", and that "Dekai teaches away from

disregarding the preceding word when it does not have a modification relationship"
(Amendment, p. 13).

In response to applicant's argument that the references fail to show certain
features of applicant's invention, it is noted that the features upon which applicant relies
(i.e., that the preceding word is not taken into account if it has no modification
relationship with the target word) are not recited in the rejected claim(s). Although the
claims are interpreted in light of the specification, limitations from the specification are
not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed.
Cir. 1993).

For, the recitations in independent claims 1, 4, 8, 9, and 14-20 are broad and
merely recite variations on the selection of "a word and/or a word sequence that has a
modification relationship" or "specifying...a different word and/or word sequence", which
Dekai does teach. Dekai's selection of words for predicting target words includes
(preceding) words having a modification relationship as well as those which do not have
said relationship, and the taught selection of a (previous) word which *does* have said
modification relationship reads on the broad claim language. Just because he is
"favoring the use of the standard bigram structure" (per Amendment, p. 12) does not
teach away from anything, since a single "word" reads on "a word and/or word
sequence".

5.   As for Dekai's "using *single* words" not being "the same as teaching the use of
the *partial analysis tree* that has a modification relationship" (Amendment, p. 12), a

partial analysis tree is not recited in the independent claims and, in any case, Chelba

was cited therefor.

6.   As for the argument that "there is no reasonable expectation of success in

making the above modification or combination in order to meet the presently claimed

subject matter" (Amendment, p. 15), applicant has merely asserted this and has

presented no argument nor referred to any empirical data which suggest otherwise.

7.   Consequently, the previous art rejections of claims 1-6, 8-12, and 14-20 are

retained, and the newly-added claims 22-23 are also herein rejected.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1-6, 8, 9, 14-20, and 22-23 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Chelba et al. (Exploiting Syntactic Structure for Language Modeling),

in view of Dekai Wu et al. (An Information-Theoretic Empirical Analysis of Dependency-

Based Feature Types for Word Prediction Models).

As to claims 1, 15, 17 and 19, Chelba et al. teach:

a computer readable program (col. 1, page 225);

specifying a sentence structure consisting of multiple words, including a target word to be predicted (specifying a word phrase, and predicting a word within the phrase, page 225, col. 2, through page 226, col. 1);

employing said sentence structure to select a word (predicting the word based on the word sequence proceeding the word, page 226, col. 2); and

predicting said target word based on said word and/or word sequence that are selected (predicting the word based on the partial parse of the word history , col. 2, page 225).

Chelba et al. do not teach a word sequence that has a modification relationship with said target word to be predicted.

However, Dekai et al. teach a word prediction method using modification relationships between the target word and other words within the sentence (page 143).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the word prediction of Chelba et al. with the word modification of Dekai et al. to increase the accuracy in which a speech recognition method is able to predict the target word, as taught by Dekai et al. (page 143, section 4.2 and 4.3).

As to claim 2, Chelba et al. teach said word and/or word sequence constitute

partial analysis tree structure in said sentence structure (using partial pareses of the word history to predict the word, col. 2, page 225).

As to claim 3, Chelba et al. teach when multiple words and/or word sequences are selected, word prediction is preformed based on said words and/or word sequences that are selected (the word prediction is based on the word history, which can include a single word, or multiple words, col. 2, page 225, through col. 1, page 226).

As to claims 4, 16, 18 and 20, Chelba et al. teach:

a computer readable program (col. 1, page 225);

specifying a word to be predicted by a different word and/or word sequence (specifying a word phrase, and predicting a word within the phrase, page 225, col. 2, through page 226, col. 1);

prediction said word using said different word/or word sequence that is specified (the word prediction is based on the word history, which can include a single word, or multiple words, col. 2, page 225, through col. 1, page 226); and

a transmitter, which reads said program from said storer and transmits said program (using the program within a automatic speech recognition device, col. 1, page 225).

Chelba et al. do not teach a word modification relationship.

However, Dekai et al. teach a word prediction method using modification relationships between the target word and other words within the sentence (page 143).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the word prediction of Chelba et al. with the word modification of Dekai et al. to increase the accuracy in which a speech recognition method is able to predict the target word, as taught by Dekai et al. (page 143, section 4.2 and 4.3).

As to claim 5, Chelba et al. teach said modification includes a modification direction, and said word to predicted modifies a prior word (the word history is used to predict a word to the right of the last word within the history, where that word is able to modify a proceeding word, col. 2, page 225).

As to claim 6, Chelba et al. teach when multiple modifications are established between said word to be predicted and said different word and/or word sequence, a word is predicted for each of said modifications (the word prediction is based on the word history, which can include a single word, or multiple words, col. 2, page 225, through col. 1, page 226).

As to claim 8, Chelba et al. teach:

a predictor which employs a structure of a sentence consisting of multiple words, including a word to be predicted to select a word/or a word sequence, and which predicts said word based on said word and/or said word sequence that is selected (a predictor that uses the word history within a phrase to predict the needed word, where

the word history has a relationship with the word to be predicted, a different history

would predict a different word, col. 2, page 225, through col. 1, page 226).

Chelba et al. do not explicitly teach a store which stores a dictionary wherein text

data that have been learned is written. However, the system is able to create all

possible binary branching parses with all possible headword and no-terminal label

assignments for the words within the word sequence. These partial parses are then

used to predict the word. It would be obvious to one of ordinary skill in the art at the

time of the invention that since these partial parse trees are created, then later used,

they would be stored once they are created, creating a store wherein text data that has

been learned is written.

Chelba et al. does not teach a modification relationship with said word to be

predicted.

However, Dekai et al. teach a word prediction method using modification

relationships between the target word and other words within the sentence (page 143).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to combine the word prediction of Chelba et al. with the word

modification of Dekai et al. to increase the accuracy in which a speech recognition

method is able to predict the target word, as taught by Dekai et al. (page 143, section

4.2 and 4.3).

As to claim 9, Chelba et al. teach a predictor which selects a word, and which

predicts said word based on said word and/or said word sequence that is selected

(specifying a word phrase, where the word history is created from the phrase, and is able to predict the word and its part of speech, page 225, col. 2, through page 226, col. 1).

Chelba et al. do not explicitly teach a store which stores a dictionary wherein text data that have been learned is written. However, the system is able to create all possible binary branching parses with all possible headword and no-terminal label assignments for the words within the word sequence. These partial parses are then used to predict the word. It would be obvious to one of ordinary skill in the art at the time of the invention that since these partial parse trees are created, then later used, they would be stored once they are created, creating a store wherein text data that has been learned is written.

Chelba et al. does not teach a modification relationship with said word to be predicted.

However, Dekai et al. teach a word prediction method using modification relationships between the target word and other words within the sentence (page 143).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the word prediction of Chelba et al. with the word modification of Dekai et al. to increase the accuracy in which a speech recognition method is able to predict the target word, as taught by Dekai et al. (page 143, section 4.2 and 4.3).

As to claim 14, Chelba et al. teach:

a specifier which specifies a relationship between a word to be predicted and

another word and/or word sequence, and which predicts said word by employing said

word and/or word sequence of said word (specifying a word phrase, from the headword

to the last word before the word to be predicted, and using the specified word phrase to

predict the word, page 225, col. 2, through page 226, col. 1);

a display, which displays said word that is predicted (usable within automatic

speech recognition device, (col. 1, page 225), where it would be obvious to one of

ordinary skill in the art, that such a device would be a computer system with a display,

since the speech recognition is converted to text).

Chelba et al does not teach a modification relationship.

However, Dekai et al. teach a word prediction method using modification

relationships between the target word and other words within the sentence (page 143).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time of the invention to combine the word prediction of Chelba et al. with the word

modification of Dekai et al. to increase the accuracy in which a speech recognition

method is able to predict the target word, as taught by Dekai et al. (page 143, section

4.2 and 4.3).

As to new claims 22 and 23, neither Chelba et al. nor Dekai Wu et al. explicitly

teach displaying the predicted target word returned to the user but this is suggested by

their use of computers for linguistic processing. Therefore, it would have been obvious

to one of ordinary skill at the time of invention to display the target word so that the user

can readily see the results of the word prediction, without having to waste trees by

printing it out when not needed.

10.   Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Chelba et al. in view of Dekai et al. and further in view of Kuhn.

As to claim 10, Chelba et al. and Dekai et al. do not explicitly teach for a

predetermined word or word sequence based on said text data, a frequency where at

another predetermined word appears is stored in said dictionary.

However, Kuhn teaches predicting the word based on its frequency of

occurrence stored within a knowledge base, (col. 1, page 348).

Therefore it would have been obvious to one of ordinary skill in the art at the time

of the invention to combine the teachings of Chelba et al. and Dekai et al. with the

methods taught by Kuhn to increase the ability of a speech recognizer to identify a word

by assigning higher probabilities to words that have been the most recently used,

limiting the vocabulary needed, as taught by Kuhn, (page 350, col. 1and col. 2).

As to claim 11, Chelba et al. and Dekai et al. do not explicitly teach said predictor

calculates a probability value for a word sequence including a word that is predicted

based on said frequency.

However, Kuhn teaches assigning higher probabilities to sequences containing

words based on their frequency of use, (col. 1, page 348).

Therefore it would have been obvious to one of ordinary skill in the art at the time

of the invention to combine the teachings of Chelba et al. and Dekai et al. with the

methods taught by Kuhn to increase the ability of a speech recognizer to identify a word

by assigning higher probabilities to words that have been the most recently used,

limiting the vocabulary needed, as taught by Kuhn, (page 350, col. 1and col. 2).

As to claim 12, Chelba et al. teach a predictor selects, as a prediction result, a

word sequence having the maximum probability value (ranking and selecting the word

sequences, col. 1, page 228).

Conclusion

11.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of
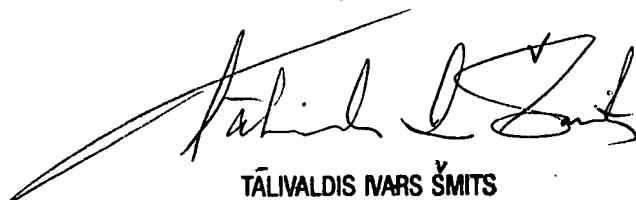
the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

12.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Talivaldis Ivars Smits whose telephone number is 571-

272-7628. The examiner can normally be reached on 8:30 a.m. to 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

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10/19/2007

TALIVALDIS IVARS SMITS
PRIMARY EXAMINER